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COMMUNICATIONS

HYDROPHTHALMIA

BY

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AN exhaustive study of this disease has recently (1939) been set forth in a monograph by Ringland Anderson, who suggests that the term buphthalmia should be reserved for megalocornea, in which the tension remains normal, and that the term hydrophthalmia should be applied to cases of infantile (congenital) glaucoma. There was not at any time any doubt about the classification of our case and we therefore adopt Ringland Anderson's nomenclature.

The subject of this communication is a boy now aged 14, who was seen for the first time at the Ophthalmic Department of the Glasgow Royal Infirmary, on December 19, 1932, when he was 4 years of age. His eyes were said to have been large since birth, and they presented the typical appearances of hydrophthalmia. There was general oedema of the cornea of the left eye, and evidence of ruptures of Descemet's membrane in both. The right

optic disc was clearly seen and was deeply cupped and greyish-blue in colour. The left fundus could not be seen owing to the corneal oedema. The diameter of the cornea was 15 mm. The tension as estimated immediately before the operations was, unfortunately, not noted on the case sheet.

On January 8, 1932, both eyes were trephined, and the pressure in the left eye was so great that the aqueous spouted on the completion of the trephining. After recovering from the operation it was found that the left optic disc was also deeply cupped and greyish-blue.

The boy was brought at intervals to the Out-Patient Department, and the mother reported that he was leading a normal life with sufficient sight to enable him to look after himself whilst playing with other boys in the streets.

There was doubtful perception of light in the left eye, and the distant vision of the right eye was never better than 6/36, but he was able to read his school books. He went to an ordinary school, and his progress was so good that he was chosen for transfer to a higher grade school. These plans, however, were upset by an unfortunate accident in March 1940. The left eye was hit by a snowball, and a fortnight later he was brought to the hospital. There was a complete hyphaema, intense pericorneal injection, with photophobia and lacrimation. The condition improved somewhat, and he was discharged from hospital on May 4, but he was not brought again until July 4, when the other eye was found to be the seat of an intense irido-cyclitis. When asked when the right eye had begun the mother said that she was quite unaware of it, because the boy had made no complaint and had constantly kept his head down on account of the photophobia.

The Wassermann reaction was negative and a diagnosis of sympathetic ophthalmitis was made, and the left eye was removed on July 27, 1940. This has not resulted in any improvement in the condition of the other eye. It is now quite blind, the iris is completely adherent to the lens capsule, and the pupil is full of exudate.

The excised eye was hardened in formalin and embedded in celloidin, sections were stained with haematoxylin, eosin, van Gieson, Mallory, orcein, and Weigert.

Sections made from the left eye showed a great variety of pathological changes due to hydrophthalmia and to the superadded sympathetic ophthalmitis, but we confine ourselves chiefly to a description of Bowman's membrane and Descemet's membrane, both of which showed unusual features.

The corneal epithelium is not affected. It has a smooth surface and is nowhere detached.

Bowman's Membrane

A great number of delicate lines across Bowman's membrane attracted attention. The majority were perpendicular to the surface (Fig. 1), but some were oblique (Fig. 2), and one was

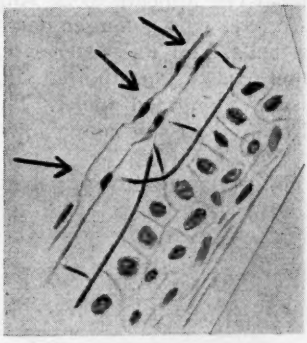


FIG 1.

Hydropthalmus congenital haematoxylin—Eosin. 10 eyepiece, 40 objective Zeiss. Cracks and fracture in Bowman's membrane.

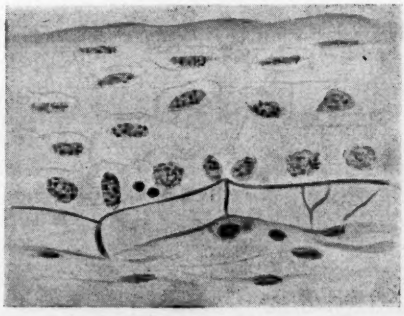


FIG 2.

Acute bend with cracks without fracture.

branched making a Y shape. They are not artefacts, and the corneal epithelium was normal in outline. In one place there was a fracture in a backward direction of the more deeply stained anterior part of the membrane with overlapping of the two ends. (Fig. 1.) Here again there was no change in continuity of the epithelium overlying this fracture. On each side of this

fracture the cross lines were more numerous, and this suggested the possibility that they may be minute cracks or creases in the membrane.

At another point there was an acute bend backwards of the anterior margin of the membrane without any change in the continuity of the posterior margin directly opposite (Fig. 2). At the bend the basal epithelial cell appears to be squeezed at the apex of the bend, that is to say, it is a longer narrower cell than the other basal epithelial cells, and its posterior end is pointed.

At another point there was a longitudinal slit in the membrane (Fig. 3), partly lined with elongated nuclei. The glass membrane itself can be distinctly traced passing along in front of and behind the slit.

Another feature noted were round bodies (Figs. 3, 4 and 5) situated on the anterior limit of Bowman's membrane. They are mostly

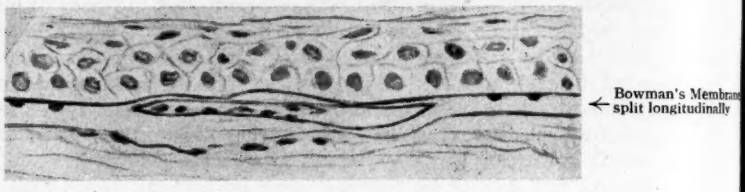


FIG. 3.

Longitudinal splitting of Bowman's membrane.

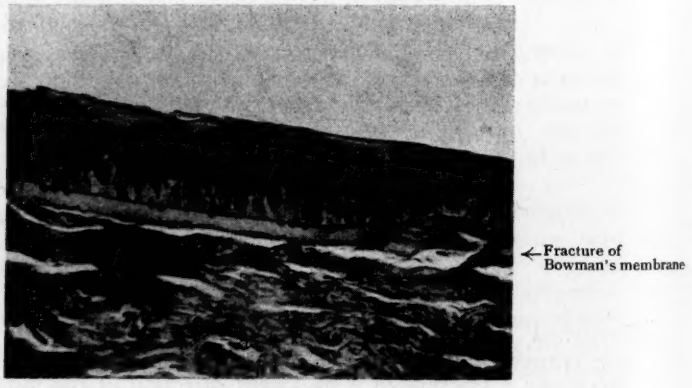


FIG. 4.

Hemisperical bodies at the anterior borderline of Bowman's membrane. Weigert stain for elastic tissue. 10/40.

hemispherical, but some are slightly conical, and a few have flattened tops. Their straight base lies on the membrane. They vary in size, some being as large as a halved erythocyte, while others are so small that they are discovered only with a closed down illumination. They are conspicuous when stained with orcein, and take the stain more deeply than the nucleus of a lymphocyte. They appear to be quite structureless. They were described by von Hippel (1928); and Talbot (1938) states that in an examination of 32 consecutive eyes he found these bodies in

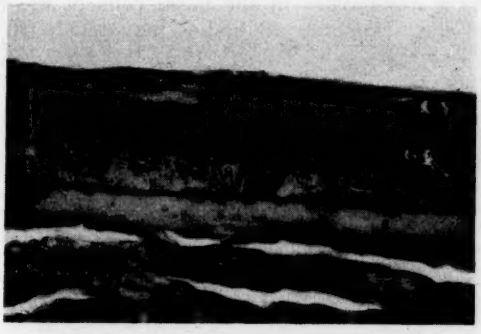


FIG. 5.

Hemispherical bodies of Bowman's membrane. Haematoxylin—Eosin. 10/oil immersion.

14, all of them glaucoma. None were found in non-glaucomatous eyes. Talbot then examined 27 old slides, and in 11 of these, in which the tension had been raised, the bodies were present.

Talbot considers that they are found only in cases in which increased tension has existed for more than a few days, and in which the tension has been increased up to the time of excision of the eye. This condition, however, is not absolute, because we have found the bodies in eyes in which the tension had for a long time been sub-normal, as in our case, and finally we detected them in an eye of a 65-year-old woman with no history of glaucoma, normal function, and normal fundi. Her globe had been excised on account of a melano-sarcoma of the conjunctiva.

It is difficult to determine the cause of their presence and their significance.

Talbot refers to explanations which have been offered.

1. That they are nuclei of corneal epithelial cells, in the posterior layer, depressed into Bowman's membrane. He considers this to be unlikely because he found the hemispherical bodies in one case in which the corneal epithelium had become detached.

2. The number in a typical section corresponds to the number of nerves which penetrate Bowman's membrane and Wolff (1938) suggests that they are connected with these fibrils. We could not detect any connection with corneal nerve fibres visible with closed down illumination.

Although we can offer no satisfactory explanation we think that their appearance and situation suggest that they are the products of disordered epithelium. In Talbot's case they may have been formed before the epithelium separated from Bowman's membrane.

In cases of high tension we do find small dark-stained circular corpuscles (Fig. 6) mostly in the basal cells of the corneal epithelium and the hemispherical bodies may result from these.

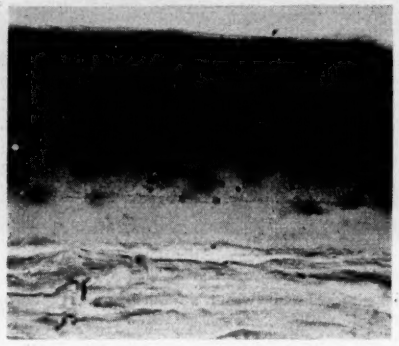


FIG. 6.

Spheroidal dark bodies within the basal cells of corneal epithelium in glaucoma absolutum. Haematoxylin—Eosin. 10/oil immersion.

Whatever may be their actual origin and mode of formation we may suppose that they are an indication of disordered metabolism of the cornea in glaucomatous eyes and that the cracks or fissures, and the fractures, and the splitting of Bowman's membrane may be placed in the same category.

The only changes seen in the corneal parenchymatous lamellae are newly formed blood vessels and lymphocytic infiltration, but Descemet's membrane reveals most interesting features.

Descemet's Membrane

Ruptures of Descemet's membrane are well known as a feature of hydrophthalmia. They were seen clinically in both eyes of this boy when he first came under observation nine years ago at the age of four.

Their pathology was studied by George Coats with his usual care and attention to detail when he described twelve cases of it in 13 cases of hydrophthalmic eyes.

In our case the rupture, which was probably ten years old, to which we devoted most attention was situated 4.6 mm. from the corneo-iridic angle, and the first thing to attract attention was the presence of two knobs (Figs. 7, 8 and 9) on the posterior surface of the cornea. These are the boundaries of the rupture and are 1·215 mm. apart.

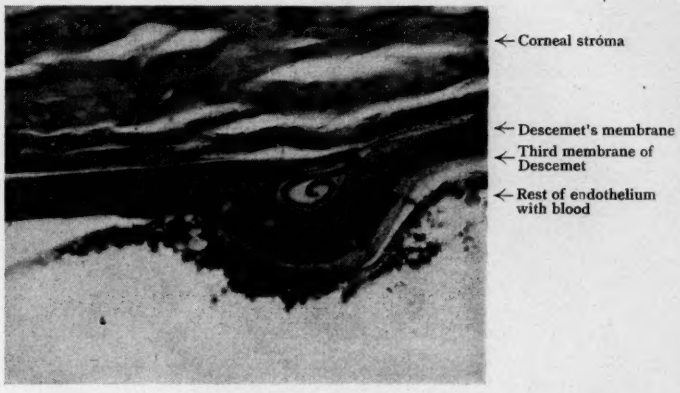


FIG. 7.

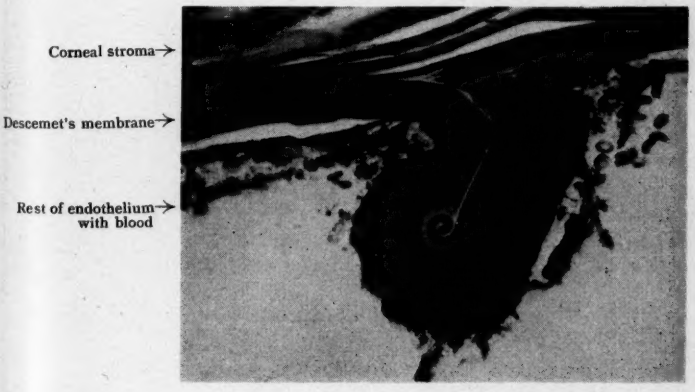
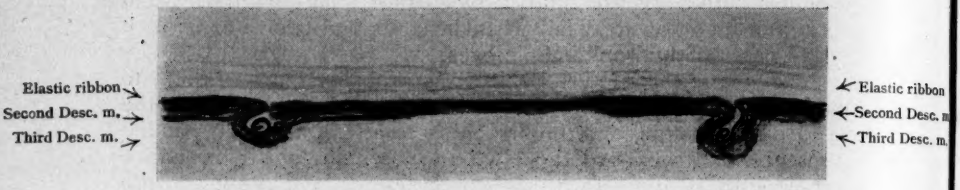


FIG. 8.



a Distance between *a* and *b* = 1·215 mm. *b*

FIG. 9.

It was these knob-like excrescences which attracted the attention of earlier observers before their significance was understood. Thus (quoting Coats' Paper) Gama Pinto (1886) noted on the posterior surface of the cornea small ovoid projections covered with endothelium, with a concentric structure, like Pacinian corpuscles, and Durr and Schlegdendal (1899) described " small excrescences of the membrane of Descemet " in one case and " nodular and tumour-like thickenings and projections " in another.

Although the condition was well-known anatomically, the first certain clinical recognition of ruptures in hydrophthalmia is due to Haab (1899).

The reason why the edges of the rupture take this knob-like form becomes more apparent, we think, from a study of the membrane itself.

There appear to be three distinct layers in Descemet's membrane because there are three degrees of staining with haematoxylin, orcein, Weigert, etc.

1. An anterior darkly stained thin layer in contact with the corneal lamellae.
2. A broad middle layer which stains a bluish pink.
3. A narrow posterior layer which stains pinkish. (Figs. 7, 8 and 9.)

The first layer does not appear in the floor of the rupture. At each edge it has curled up in an anterior direction in the shape on one side of a reversed S, and on the other side in the shape of the head of a Bishop's staff. It is this curl which is the basis of the knob-like prominence, and the other two layers form a cap over it. These two layers, and especially the middle layer, are much broader over the prominence than elsewhere, and there is irregularity of their width in the floor of the gap.

In our case there had been an intense irido-cyclitis for four months prior to the removal of the eye, and it is therefore not surprising that across the rupture there is loss of endothelium, which is replaced by many irregular flat nuclei and heaps of red blood corpuscles—the remains of the hyphaema.

The ability of endothelium to spread widely is well-known and therefore it will quickly cover the gap in the cases in which it also had given way. Coats states that in all his cases, in which there had been no complications of an inflammatory nature, the endothelium was intact over the gap, but he cites other cases from the literature in which its regeneration was irregular and incomplete.

The opacity of the cornea which accompanies the ruptures of Descemet's membrane is due to contact of the aqueous with the corneal parenchyma. The degree and permanence of the opacity depends upon the duration of that contact. We think it possible —nay probable—that not all ruptures involve the whole depth of the membrane in which case there would be no opacity at the site of the rupture.

Regeneration of Descemet's Membrane

We have stated that the staining reactions of these 9 years old ruptures suggest that there are three layers in Descemet's membrane proper. This view is supported by a study of the regenerated membrane.

Regeneration appears to be confined to the two posterior broader layers which can be traced as a seemingly continuous sheet from each side of the rupture, over each knob, and across the floor of the gap (Fig. 9). But examinations with the highest power reveal that there is not always end to end continuity but that a minute gap may separate the ruptured ends of the two posterior layers. (Fig. 10.)

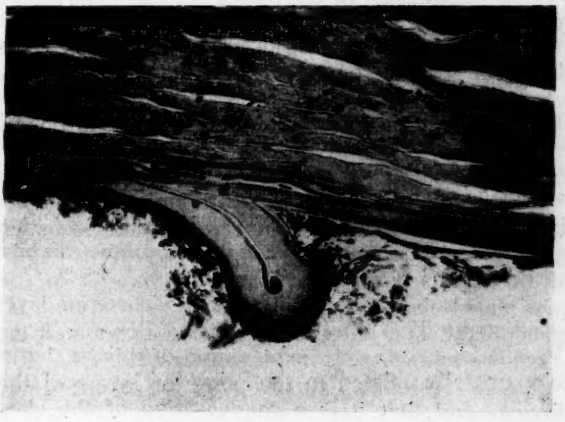


FIG. 10.

On the other hand there is no evidence of regeneration of the thin anterior darkly stained layer, the truly elastic layer. When it ruptured its edges sprang apart, and have remained so, and there is no sign of it in the floor of the gap.

Over the knobs there is increased thickness of the broader homogeneous layers plastered over the divided ends of the thin anterior layer, comparable to the excess of callus thrown out around a badly opposed fracture of bone.

Ranvier (1898) in studying Descemet's membrane which had been ruptured experimentally considered that regeneration took place from the convexity of the curl thus filling the gap. But we show that it is only the elastic layer which is curled and that the other layers form a continuous sheet over the curled anterior layer and across the gap. But it must be noted that Ranvier studied fresh ruptures whereas our ruptures are probably 9 years old.

The thickening of the two posterior layers on the cap over the curled up anterior elastic layer may be due to a bunching up by the edges of the ruptured elastic layer as they sprang apart.

It may be that the broader posterior layers are tougher than the thin anterior layers and that they do not always give way as the eyeball stretches. It would be interesting to know if it is these two layers, rather than the whole membrane, which prove so resistant to rupture in perforating ulcer of the cornea, and we intend to pursue enquiry on that point as pathological material offers.

In describing the development of these parts Ida Mann states that the endothelium is formed by a flattening and re-arrangement in situ of mesodermal cells in the posterior aspect of the cornea and that it does not grow in from the periphery, that the structureless layer (Descemet's membrane) is homogeneous from the first, and that elastic fibres are recognised in the deepest layers of the parenchyma directly in contact with Descemet's membrane. This last statement is interesting in view of our suggestion that the only elastic part of the membrane is a thin sheet of it in direct contact with the substantia propria of the cornea.

Descemet's membrane is thought to be produced by a secretion from the endothelial cells, whereas Bowman's membrane is simply a condensation of the anterior corneal fibrillae (Seefelder, quoted by Wolff). For that reason Descemet's membrane can be reformed whereas Bowman's never regenerates.

But, as stated above, it is only the two posterior layers which are regenerated. The anterior layer, like Bowman's membrane, is not regenerated. May the explanation of this be that this layer is developmentally related to the posterior layers of the corneal parenchyma, and that it is a condensation of the elastic fibres contained therein just as Bowman's membrane is thought to be

formed by condensation of the fibrillae of the anterior layers of the cornea.

Elasticity of Descemet's Membrane

The sections throw some light on the question of the elasticity of the membrane. Coats did not consider it to be elastic, and believed that the fact that it assumes curly or spiral forms when divided is no proof of its elasticity but of its lack of elasticity. If it were truly elastic it would, when divided, thicken and retract but retain its original form, and he pointed out, in support of this contention, that a sheet of stretched India rubber when cut or torn does not curl up like the membrane of Descemet. He regarded the membrane as a sheet of resistant but brittle material.

It is true that the curling of the torn edge is not what one would expect from an elastic membrane. One would expect the curling to be in spiral form, whereas our sections show the curl to be in the shape of a reversed S and some of them resemble the curve on the head of a Bishop's staff.

We consider that this behaviour of the ruptured membrane is due to the three layer formation of Descemet's membrane, that the layer next the parenchyma is elastic, and that it is covered by the rest of the membrane, which is non-elastic. The elastic part is probably less in thickness than one-third of the whole. When ruptured, the non-elastic two-thirds serve to hold the elastic sheet in position and thus prevent it from retracting in the ordinary manner of a cut stretched elastic rubber sheet. In that way it is only a small part of the elastic sheet which is free to change its shape when torn, and it takes the shapes shown in our sections.

In another connection—a case of xanthomatosis bulbi—in which the Sudan stain for fat was used, it was only the anterior dark layer, which we presume to be the elastic one, which took on the red stain, and it did so extensively (Loewenstein, 1941*a*). Further, in a case of intensive conjunctival argyrosis selective silver staining of the elastic elements is found (Loewenstein, 1941*b*). Studying such a case with the slit-lamp one finds silver staining of this layer, a further proof of its elastic nature.

These two observations suggest that there is a difference in chemical composition between the anterior third and the posterior two-thirds of Descemet's membrane.

Fig. 11 supports the view of those who consider that Descemet's membrane does not end abruptly peripherally (Ringland Anderson, p. 74). The section shows that the membrane splits in a fan-like manner and the split up layers can be traced as a network into the dense scleral fibres. This is best brought out by Weigert's stain.

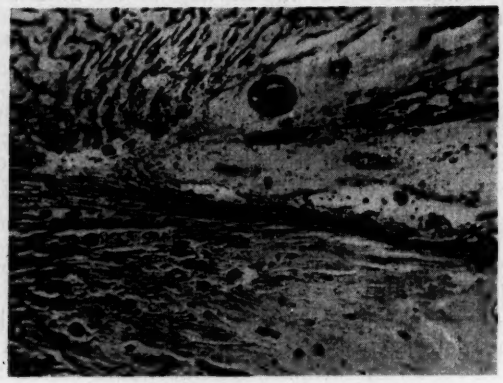


FIG. 11.

The other pathological features found in this eye are the result of the blow with the snowball and the irido-cyclitis which followed it.

(1) The anterior chamber is filled with blood.

(2) The iris is infiltrated and swollen, with great masses of blood in the midst of the iris tissue.

(3) The ciliary body is enormously swollen and densely infiltrated with lymphocytes and a great number of epithelioid and giant cells are seen.

(4) Pigment is scattered all over the ciliary tissue.

(5) The choroid is infiltrated and thickened. Most of the infiltration mass consists of lymphocytes, but there are eosin-stained epithelioid cells and huge giant cells. Parts of the pigment epithelium are destroyed, parts are detached, and in other places it has thickened to several layers producing small and large plaques.

(6) Behind the lens the retina lies completely detached and is in thick folds stuck together round a necrotic centre with large pigmented cells and hyaline degenerative patches.

Summary

1. A case of hydrophthalmia is described clinically and histologically.

2. In Bowman's membrane hemispherical bodies, cracks and splits are found.

3. Features are described which suggest that Descemet's membrane consists of three layers, a thin anterior layer and two broader

layers covering the former. The staining reactions and the appearances at a rupture indicate that the thin anterior layer is the truly elastic part of the membrane and that, developmentally, it may be derived from the posterior corneal lamellae, while the two broader posterior layers are the only part derived from the endothelium.

4. The bearing of these observations upon the questions of the regeneration and of the elasticity of the membrane are discussed.

5. When the boy was 12 years of age the eye sustained an accident which was followed by sympathetic ophthalmitis. The numerous pathological signs of this are mentioned.

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CENTRAL RETINITIS IN A GIRL AGED EIGHTEEN YEARS. RECOVERY

BY

ROSA FORD

LONDON

THE prognosis in choroiditis is usually bad as regards the area affected. As Duke-Elder[1] states, " . . . despite any type of treatment, the lesion involves a complete and irremediable destruction of the area involved . . . " When this area is central, the resultant loss of central vision makes the outlook hopeless.

The aetiology is frequently uncertain, and while we are occupied with the often prolonged search for one of the multiple possibilities of septic foci which may be responsible, the damage is done.

The report of a case in which recovery occurred may therefore be useful.

M.A., aged 18 years, when first seen at the South London Hospital for Women in January 1934, had a small patch of

1. Duke-Elder, Vol. III, p. 2249.

choroiditis in the right fovea which, in 3 days, had reduced vision to <6/60. The left fundus was normal and vision in this eye was 6/6, but the next day, *i.e.*, 4 days after the onset in the R.E., a similar rather larger patch began to develop in this eye also. On this day she was admitted.

The cause was obscure. The patient considered herself perfectly healthy and had not had any recent illness. My colleagues at hospital who kindly examined her, could find nothing to account for the condition. Every investigation, medical, dental, nasal, X-Ray of the sinuses and the Wassermann was reported negative.

Experience with another similar case, however, had made me suspect that though clinically and radiologically the sinuses appeared normal, they might, nevertheless, contain hidden septic infection.

This other case, a man aged 49 years, was first seen in 1920 because for 2 days his left vision had been impaired. In this eye was a small patch of choroiditis close to the fovea, similar to that seen in M.A. except that on the fringe of the pigmented and pale spots were some minute haemorrhages. Vision was 6/60. Three and a half years later, his right vision having become dim for two days, a similar patch was seen in that fundus, rather to the side of the fovea, so that central vision was still 6/6. During the next year, as the choroiditis spread towards the fovea, it gradually sank to 6/24, the left vision then being <6/60.

He remained under observation for 16 years during which time extensive areas of choroidal atrophy developed in both fundi and only a little peripheral vision remained.

The cause was again completely obscure. He was a perfectly healthy man and remained so, and, though every kind of specialist had been consulted and every investigation made, nothing to account for the eye condition was ever discovered.

But at one time there had been a check to the progress of the disease lasting for over 2 years. After a submucous resection of the septum, undertaken purely empirically, right vision rose from 6/24 to 6/9 and, after a negative irrigation of the antra eight months after the resection, it rose to 6/6 and so remained for the next year and eight months. For over a year no fresh lesions were observed in either fundus. The case is reported more fully in the Proceedings of the Royal Society of Medicine, March 1929, p. 622.

It was this, the sole success of any treatment, which had led me to think that in M.A. the cause might lie in infected sinuses in spite of the negative clinical and radiological findings, and I determined to try to promote drainage of the sinuses.

Beginning on the fourth day from the first onset, a small piece of wool soaked in peroxide was placed in each side of the nose every morning and left there for 20 minutes. She was also given

three inhalations of Friar's balsam and took 6 grs. of pulv. aloes barb. daily.

The improvement which followed was as rapid as had previously been the progress of the disease. In four days the central scotoma in the R.E. which had extended 15° from the fixation point, had dwindled to 5°. In the left eye there was still a paracentral scotoma extending 22° from the F.P. Left vision was 6/18 and was probably already recovering.

After three more days, the right scotoma had disappeared and the left had become minute; a week later this too had vanished.

Twenty-four days from the first onset, vision was 6/6 (every letter) in both eyes and only the pigmented area in each fundus remained as a permanent scar.

The peroxide and aloes treatment was continued for two years, the patient fearing to discontinue it. Her health remained excellent and she scored over her fellow students at college by escaping the colds from which they frequently suffered.

In July 1941, 7½ years later, M.A. had become a fully qualified Domestic Science Teacher and had had no further trouble with her eyes.

Conclusions

1. The prompt recovery following nasal treatment seems to confirm the view that a septic focus in the sinuses was responsible for the choroiditis. It follows that a negative clinical and radiological report is not conclusive evidence against the existence of infection in the sinuses.

2. The initial rapid advance of the choroiditis leads one to think that without the nasal treatment, irreparable damage might have been done to the overlying retina and that the subsequent course might possibly have been similar to that of the man. That we were able to begin treatment as early as the fourth day of the disease made the complete cure possible.

3. The completeness and permanence of the result indicate that the treatment was effective in subduing the sinus infection and was probably safer than operative treatment would have been at the time, as any traumatic exacerbation of the inflammation in the sinuses might have led to an increase of the eye lesion. It is important, however, to note that peroxide packs are not suitable for all patients. In some cases, other measures to promote nasal drainage are more successful.

RETINITIS PIGMENTOSA WITH MACULAR DYSTROPHY. REPORT OF A FAMILIAL GROUP

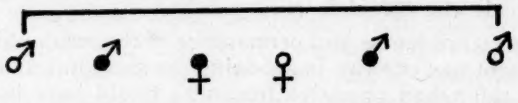
BY

ARNOLD SORSBY

LONDON

IN an earlier communication (*Brit. Jl. Ophthal.*, Vol. XXIV, p. 469, 1940), attention was drawn to the wide range of appearances seen in macular dystrophy. It was argued that the classical conception of a limited central lesion was not borne out by the actual data. In many cases there is considerable involvement of the peripheral zones, so much so that it was pointed out that to designate these cases as macular dystrophy is like speaking of retinitis pigmentosa as "equatorial degeneration of the retina"—an early and striking change rather than the whole picture would be stressed. The fine graduation of macular dystrophy into generalised dystrophy of the retina was exemplified by recorded cases in the literature showing retinitis pigmentosa with varied and early involvement of the central area, and a case was described (ibid., case 2, p. 485), showing clearly the association of typical retinitis pigmentosa with macular dystrophy of the atrophic type. In this particular case no hereditary or familial incidence could be established, so that there was some lack of validity in drawing on this case for an argument on clearly defined familial and hereditary lesions. The present note supplies the necessary validity, as it concerns a familial group showing the association of the two lesions.

Family history: Two of the four sons and one of the two daughters in this sibship are affected. The family is of consanguineous origin, the father being a cousin of the maternal grandfather. There were no miscarriages or early deaths in the sibship.



Personal histories: (1) Samuel H, aged 37 years. Does not remember having any difficulty with distance or night vision till about the age of 20 years. Vision has deteriorated greatly during the past five years. At the present it is 6/60 in each eye with correction (R. +1·0 D.Sph. ○ −2·0 D.Cyl. 180°, L. − 1·0 D.Sph. ○ −1·0 D.Cyl. 180°). The fields are contracted to the fixation point.

(2) Sarah H, aged 34 years. Has always been conscious of night blindness, but vision has been sufficiently good so as not to

interfere with philological studies at a university till seven years ago. Sight has deteriorated greatly during the last three years. Vision with correction: R. 6/36 $\bar{c}$ — 8·0 D.Sph. ⊂ — 0·5 D.Cyl. 180°, L. 6/60 $\bar{c}$ — 7·0 D.Cyl. ⊂ — 2·50 D.Cyl. 180°. Fields extend 10°—15° around fixation point. The patient suffers from duodenal ulcer.

Ophthalmoscopically both patients show essentially similar pictures. Typical bone-corpuscle pigment is distributed rather unevenly over the different sectors of the fundi, which also show gross pigmentation here and there. The discs and retinal arteries are characteristic of retinitis pigmentosa, and there is considerable unmasking of the choroidal circulation. (Figs. 1 and 2). The macular lesions correspond closely to those shown in Figs. 34 and 35 of the original communication.

The other affected member in this sibship could not be examined. His age is given as 28 years, and his difficulties appear to be of the same type as those experienced by his brother and sister. The parents and the unaffected sibs could also not be examined, as most of the members of this family reside in Poland. A cousin of the patients was seen and found normal.

This group may be taken as lending support to the view that macular dystrophy cannot be put in sharp antithesis to generalised

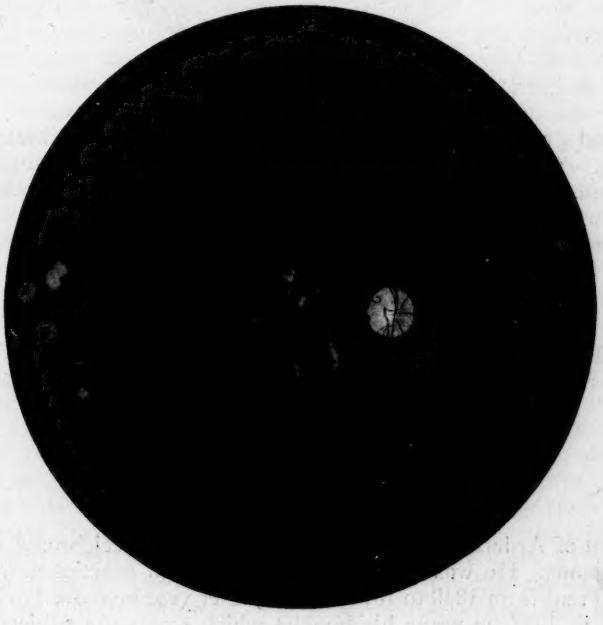


FIG. 1.

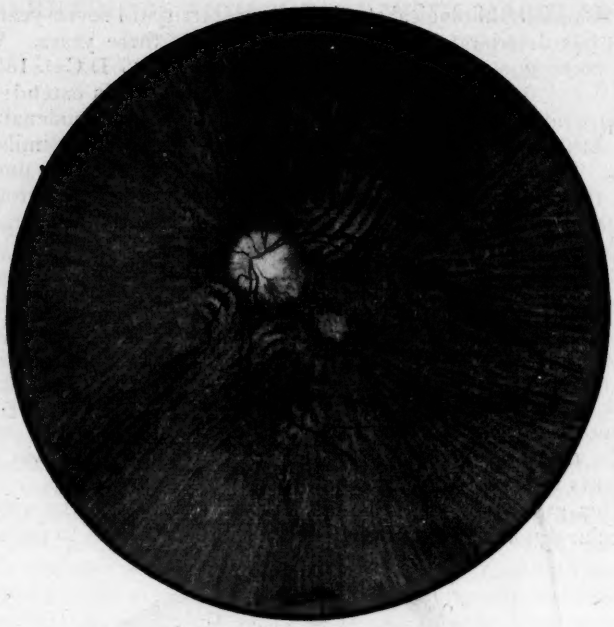


FIG. 2.

retinal dystrophy of which retinitis pigmentosa is the best known type. The various clinical types of retinal dystrophy are not rigid entities, but probably localised expressions of one fundamental disturbance.

I am indebted to Mr. F. A. Williamson-Noble for kindly referring this family to me.

A FIFTEENTH CENTURY ENGLISH TRANSLATION OF JOHN OF ARDERNE'S *de Cura Oculorum*

BY

R. R. JAMES

WOODBRIDGE

JOHN of Arderne was the first of a long line of celebrated English surgeons. He was born in 1307 and was in practice at Newark-on-Trent from 1349 to 1370. In the latter year he moved to London and in 1377 he wrote his booklet which forms the subject of this

paper. We do not know the date of his death, nor do we know where he learnt his art. In one of his writings he describes himself as " chirurgus inter medicos," and in another as " cirurgicorum minimus "; but he was evidently in extensive practice and his writings cover a very large field. Perhaps his best work was on fistula-in-ano, piles and rectal cancer. This displays great powers of observation and is well documented with case records. It is decidedly original. The same cannot be said of his treatise on the cure of the eyes; it is for the most part a compilation from the work of others, notably Lanfranc. Ophthalmologically it is worthless, but not without interest.

We know of two early manuscripts of this booklet. The first is in Latin and is in the Sloane collection at the British Museum (Sloane Ms. 75, fol. 145). It is considered as belonging to the early part of the fifteenth century. The second is a fifteenth century Ms. in English at Emmanuel College, Cambridge (Ms. Western, 69, fol. 65). The latter was copied by Sir D'Arcy Power and was alluded to by him in a paper on Arderne's works read at the Seventeenth International Congress of Medicine in London in August 1913. This copy is now in the library of the Royal College of Surgeons of England.

Although the two texts agree in their sense to a large extent they are by no means the same. The Latin text gives us Arderne's own statement that he wrote the treatise in the year 1377 when he was seventy years of age; this is not found in the English Ms., nor is the arrangement of the subject matter quite similar.

A brief abstract of the contents of the Latin text was given in my " Studies in the History of Ophthalmology in England prior to 1800," and may be epitomised at this point with advantage.

The title is *de cura oculorum*. In the first place is given the method of preparation of a collyrium for sick eyes due either to injury or flux of humours. Then follows the account of an emplastrum; the contents of the latter are the white of a raw egg well beaten up, to which is added a half part of rose water and a like amount of woman's milk with the weight of a penny or a halfpenny of crocus. Next there is a paragraph on swelling and discharge. Arderne makes a great point of purgation by means of " the pills without which I would not like to be." An apple poultice and the bramble collyrium called redebrerecropys, epatica and oil of roses are recommended; and then comes a long paragraph on the excellencies of tutty. This is followed by the views of John of Damascus on hot and cold causes of disease and the good results obtained by means of general treatment with the ierapige of Galen, both of which occur in the English Ms. Lippitudo is next dealt with and then Arderne wanders off into more general matters, such as laxatives, an acid drink, alleviation of piles and a trochiscus for coughs.

The English Ms. has no title. At the bottom of a page which deals with the treatment of orchitis Arderne suddenly bursts into a description of the use of tutty in sore eyes. In printing the Ms. I have tried to keep as close to the original as possible but an exact reproduction would have necessitated the use of a special fount of type. The writer has no method in his spelling and we find the same word spelt in a variety of ways in different parts of the Ms., but this is of course common in all such early manuscripts. The writer's " yzene, yze, yene " all mean eyes. " Th " at the beginning of a word such as " the " is rendered by a sign which looks like a cross between a capital " D " and a capital " V." After much cogitation I have decided in most instances to print it " D "; " th " in the middle of a word is printed " d," as "fader" for "father"; "th" at the end of a word I have printed "th." "In de weche" will be easily recognised as "in the which," but " dus " for " thus " looks odd and I hope that readers will be able to make out the sense. The ampersand is given as in the original. The letter " g " is often written " y," e.g., " ey " or " eye " means " egg." You find the same spelling in Chaucer.

The transcript of the English Ms. is as follows:—

Thuthia is founden at de potekaryes & a pounde ther-of is worth XII d. De thennest platys of hem schulbe chosene to cure with de yzene, & they comen from beyende de see. It is a grete medycine for de yzene whanne it is made redy as scheweth after. And it schalbe made redy in dis wyse. Tuthia schalbe putte in a schelle or in a litill erdene potte & sette in a strong fyre be de space of ane oure une-to de tyme it will be glowinge hote, & dane it schalbe taken out & qweynt in de juse of ffenell or in whyte wyne, or in de uryne of a mane-chylde dat is a virgyne, & whanne it is colde it schalbe putte in-to de fyre ayene & made hote as it was to-fore, and afterwardes qwenchyd ayene in de same liquor.

And so it schalbe done IX tymys atte de leeste. And after de laste combustyone it schall kele by it-selffe without ony more qwenchynge & whanne nede is it schalbe grounden small uppone a stone & putte in-to de yze. Dis pouder conforteth de syghte with wypinge and dryinge and doeth awey de sorowe of de yzene ffor by his coldnesse he taketh awey de flowynge mater and with his drynesse de weche is with-outen fretynge he dryeth up de superfluites dat be gaderyd togydere in de veynys of de yzene.

And de strenger werker of de II ys de wasscher, for thorough wasschynge de erdely partys ben putte awey, & so be de dryere and be de wasschere de helde* of de yzene ben kept.

De poudir of thuthia bounden in a small cloth & wele sodene in wyne in manere of a colerye & droppyd in-to de yzene delayeth

* helde = health.

de teerys & de rednesse & claryfieth de syghte. Note. Also thuthia wasschen as it is aforseyd and small poudryd and reffreschyde with de pouder of sugre evene medlyd togydere fretyth awey de webbe or de cloth in de yzene & claryfieth de syghte, it constreyneth de teerys & maketh small de swellynges of de yze-lyddys, & destroyeth de rednesse & de yechynge it delayeth & maketh de yzene opene & large & conforteth & preservyth de syghte. Also a droppe of bawme droppyd II or III in de yzene of hem that haven spottys or webbys clensyth wele de yzene & scharpeth strongley de syghte & by his naturall vertyw he strengtheth & conforteth *per certo*. ffor de ruborous & brennynge of de yzene & for terys & to conserve & fortyfye de syghte, *Recipe*. Tuthie small poudryd & medle it with de lyquour in de weche it was last qwenyte after de combustyone & yf it be foryeten in weche lyquour it was qweynt, danne medle it with de uryne of a masculyne chylde dat is a mayde or with whyte wyne & make it not to thenne, but as it may cleve to de sydes of ane holowgh basyne dat is fayre and clene de weche schalbe anoyntyd abowte de botomme, of de tuthye medlyd with de uryne or with de whyte wynee and after de anoyntynge it schall stande stylle a whyle & drye that it renne not awey by de sydes of de basyne, but or it be all drye.

Take de pouder de Aloes epatyke & throwe it uppone qwyke colys & anon de basyne with Tuthye schalbe whelwyd* ther-one & so it schall lye tylle it be drye of de fume of aloes that ascendyd upp therto. And whanne it is colde take dat that clevyth to de basyne & schave it of, & yf it be nede grynde it smaller & whanne thou wolt use it. Take of thys pouder a lityll quantyte & putte it uppon de spotte of de yze & it schall hele it & de oder forseyd syknesse of de yzene atte de beste with de softers remollytyffes furste putte.

Also for de cloowd in de yze to putte it awey withoute ony duresse & to claryfye de yze and to hele it perfytly with dis medicine contynued de weche schalbe made thus. *Recipe*. of de graynes of eyrene XXX or XL & with sugre caffatyffe bray hem in a basyne mortar in de manere of salte & afterward drye hem at de sonne and make pouder ther-of & putte ther-of in de yze & it schalle delaye de forseyd peyne.

ffor strokys of de yzene of what manere dat evere de ben with stone or staffe or harde stubbe or swerd† or ony lyke. The pacient schalbe holpe as sone as it may be with de cleere of ane ey or de humours be dyssolvyd in de yze wher through it myght be destroyed. And bewar dat dou putte no manere medicine to de yze whanne it is nywe hurte but de whyte of ane ey wele steryd & dyspumyd & with de hurdys of clene fflex & small it schalbe putte

* Inverted. † Sword.

uppone de yze clos. We seyne furdermore dat de cleer of ane eye (egg) doth III thynges to de yze dat is smetyne ffurst it swageth for hys softnesse, de seconde it constrayneth de wykkyd humours of de yene, de thyrde it clensyth and letteth that no superfluite of oder humours or spywme schull come to de yzene. And it is callyd cleer for it clarefyeth. And yf ther be putte to dis medicine a lityll saffrone and womans mylke it is de more perfyter, from lanfrancum. Some folysshe lechys and unkunnynge whane dey seene a mane smytene in de yze dey takene wex and comyne poudryd & medlyd togedere & make ane emplastre & dey leye it hote uppone de ye dat is hurtte.

And lanfrancus seyth dat yf de cote of de yze be broken it draweth outward all de substances of de yze & so folowynge all de humours of de yze. ffor de wex hath II propirtees, it draweth & consumyth. And de comyne dyssolveth & melteth thorough his hete & moystenesse & dese III ben contrarious de weche destoyene all de substaunse of de yze, dat is to seye, dyssolvynge drawynge & consumynge. And yf de cote of de ye be not brokene, thanne de forseyde emplastre dat is dere causeth de spirytes & de humours to have grete sorowe & prykkynge abowte de yze & so de yze is alwey appeyryd tyll it is wastyd with all de substaunse. And therfor in what wyse dat ever de yze be smetyne with-inne or with-oute de medicine schalbe alwey as it is aforseyd with de cleere of ane eye. ffor all that is lyke encresyth & norysscheth hys lyknesse. And for dat de ye is cold of complexione he dyssolveth not de humours of his norysschenge for de stroke dat he sustenyth from lanfrancum & it is to wete dat many have loste here yzene thorough ane emplastre made of wormode & olibanum & oder hote thynges dyssolvynge, from lanfrancum.

Ther-for be-war of de forseyde thynges de weche hurtyne. After some auctours de yelke of ane ey with de oyle of rosys putte uppone de yze dat is smeten or kutte with irene abateth de ache. Also yf de ye be smeten & almoste throwen oute and be blody *Recipe* de juse of agrimonye with de whyte of ane ey wele beten & despumyd & medle hem togedyre & with hurdys ley it ther-one & it schalbe wele helyd *per certo*. And yf de cote of de ye be broke of ony stroke, thenne this medicine schalbe putte withinne de ye, de weche is callyd *virtus a deo datur*, dat is to seye, a vertyw yoven of god & founden be de seyd lanfrancum.

And for de grete vertyw dat it hath in werkynge it is callyd so to fore alle oder medicines. *Recipe* nywe leyd eyrene of whyte hennys & drawe oute of heme alle de streyns as many as thou mayste fynde & thane putte hem in a brasyne mortare & grynde heme tyll dey be made in de manere of ane oynement & thanne putte it in a glasse, & whanne dou schalte use it, putte therof in de yze a lityll II in de day tylle dat de cote be savyd & hole

thorough here savyour, de weche Johannicus calleth conninctyffe i* joynynge togedyre or helynge.

This medicine helyth de cote & clensyth de yze of spottys & blemyssches yf it be done or de ye putryfye i. rote.

This reede colerye helyth alle de rubour of de yzene de weche is made, de cunis rubi, i* redberycroppys.

They schulbe stampyd in de manere of salt & sodene in whyte wyne to de myddell dele & afterward it schalbe clensyd & therof ther schalbe putte in de yze I drope or II it delayeth de rubour & de ycchynge of de yelyddys, but de veyne of de fforhede schall furste be kutte or de medicine be putte ther-too.

Take de croppes of de ellertre or hyllertre & stampen hem and tempre hem with de whyte of ane ey & leye it one hurdys & putte it to de ye and yf ther be putte to dis medicine saffrone it is moche de bettere, it stauncheth de sorowe of de yene of what cause that evere it be. Also aloes soden in whyte wyne & clensyd & with a penne droppyd in-to de ye is ane hygh remedye ayenst de ycchynge of de yene. And to this seyd medicine yf ther be putte ther-to de roote of lylye wele soden undir hote asschene, it heleth de syknesse.

Ayenste de overcomynge & swellynge of de broowys & for cloowdynesse of de yene ffurste ther schalbe made a purgacione with pellettes withoute de weche I wole not that it be done.

This emplastre furste abateth de swellynge of de ye. de seconde it gadereth to hys place that is nedfull, de IIIde it swageth de sorowe & rekevereth de syghte from lanfrancum.

The manere of purgynge with de forseyd pellettys is dis. or de pacient be purgyd he schalbe dyetyd at de leest III dayes tofore with duretykes & oder softe thynges, as with grywell dat is made with porke, or with woortys of malowys or borages, or Arage, & with rere eyrene, & every day he schalle take be de morowe fastynge VI spoonfull of de syryp of oximell, with as moche of warme water. And he schall not soowpe in dat day that he purposyth to be purgyd one de nyghte, and he schall chese hym a soowderne wynde tyme whanne de soowderne wynde is softe & not tempestuous & he schalbe-war dat de moone be not in signs ruminandi, dat is to seye dat it be not in Aryes, Tauro, or Capricorne. It schalbe dysposyd also yf it may be done dat de pacyent be clystered onys or he resseyve de pellettys. And whane de pacient is made redy as it is aforseyde, he schalbe purgyd ane oure after de sonne is go downe. Take of de pellettes withoute de weche I wolde not be, dat is to seye XI or XIII or XV, after de strengthe of de pacient, & de pellettes schulbe of de gretnesse of oo pese, & they schulbe yoven in rere eyrene or wounde in obeleys within wyne or ale or mede, & without chowynge dey schulbe

* The "i" seems to stand here for *i.e.*

swolowyd downe. And whane de pellettys ben resseyved lete de pacient do what he wole, saff he schall neyther ete ne drynke after de medicine, & yf that he have talentte to slepe lete hym slepe a lytyll yf he may, but no full slepe, & lete hym bewar dat he swete note for so myghte de strengthe of de medicyne be consumyd.

And yf he slepe to longe he schalbe waked, & whane de pacyent felyth hurlynge & gurgyllynge in de wombe, de pacient schall meve hyme-selfe & whane he seeth tyme he schall goo to seege with a basyne sette undernethe & thou schalte counte or rekene his segys & he schall not slepe une-to de tyme dat he be fully purgyd.

And *nota* that de leche schalle see de syknesse of de pacyent. This purgacione dus done de pacient may slepe & reste hym wele ynowgh, & yf de pacient be thrystlew in de morne it is a sygne of goode purgacione.

After dis schalbe yove hyme wyne yf it may be hadde medlyd with warme water ffor that is good drynke & holsome for de stomake & voydeth wele de humours dat ben drawen or constreynyd be de seyde pellettes. Yf wyne may not be hade ther schalbe yove oder drynke as ale be hym-selfe or with de browes of ane henne, or of ffressch flessch & such oder. Memorandum that I purgyd a wommane with pellettys withoute de weche I wolde not be & I yaff hem in de month of Marche whyle de moone was in geminis & de wynde in de sowde with de usynge only of oximelle & I yaff here of de forseyde pellettys de weyghte dimidium ane unce abowte VIII one de clokke in de nyghte. And whane day were taken sche slept IIII owrys : after mydnyght sche begane to seege & be VI one de clokke at morne sche hadde VII seegys & thane sche slepte ayene & aros & eet here mete in dywe tyme & was wele at ese. And it is to wete dat sche was purgyd of moche fylthy mater at de beste & withoute grevaunce & so de wommane was hole of a grete syknesse & of de hedache thorough usynge of de seyde medicine.

Also in the monthe folowynge whyle de mone was *in cancro* in all wyse as it is aforseyde, with de forseyde pellettes taken as dey were in de fyrste tyme, sche was spedde of her erande.

The mylke of a wommane or of ane asse medlyd with de yelke of a rawgh ey and with saffrone & oyle of rosys & putte to de ye, aswageth & wypeth awey de fyry flewmes of de yene & de postemys of de yene. And yf de juse of greneache be putte to de forseyd thynges, it is de more alayinge of de seyd sorowe.

Saffrone wypeth awey de fylthe of de yene & putteth awey de flowynge of humours dat rennen to de ye & it avayleth in puttynge awey de webbe from de ye, it is resolvynge & rypynge with de manere of styptyknesse. Also it helyth de yene dat ben enfectte with to moche blood & de spottes of hem, dat is to seye yf it be

of de poudre of de saffrone dat cometh from de este partys. It schalbe leyd uppone ane hote tyle to drye and with de whyte of ane ey wele beten & dyspumyd i scomyd, it schalbe tempryd. And that is cleerest ther-of schalbe hylde in-to de ye. And whanne de ye is closyd ther schalbe putte ther-one ane emplastre of de mylke of a rawgh ey & saffrone & oyle of rosys & with de hurdys of clene fflex dat is softe it schalbe leyd uppone de ye in de manere aforseyd.

The mylke of a wommane saw swageth de sorowe of de yene, & rypeth de mater & clensyth & mollyfyeth, & it moysteth de drynesse of uvee tunice. And nota dat uvea tunica is dat dat scheweth holy or as thorough it were boryd or oyrled, de weche is schewyd in de balle of de ye.

The whyte of ane ey wele swongen and scomyd & leyd to de ye hath III propirtees. ffurste it abateth de akynge, de seconde it constreyneth straunge humours & kepyth de naturall humours, dat dey dyssolve not de yene, de IIIde it clensyth & lettyth dat no superfluite of oder humours ne spume come to de yene, but only preserveth & heleth heme.

The water of rosys chaungyth & draweth awey de in naturall hete of de yene & conforteth de brayne & multyplyeth de animall (i soul) spyrites of de brayne. The mylke of a wommans breste ofte droppyd in-to de ye rypeth & wypeth & clensyth obtalumina, dat is to sey de hote posteme of de yene & also it stauncheth de akynge from Gordon ca° de eadem.

These ben de thynges dat aswagyne & meeken in de curacione of yene: de mylke of ane asse & of a wommane, de white of ane ey & de yelke of de same, oyle rosette & oyle of vyolette, mustilage, psillium*, lynseed & citoniorum i cytrines. And note dat alle the thyngys dat reboune ayene or smytyne ayene de hote mater aswagen ayenward de ferventnesse ther-of. And tho dat ben smytynge ayene & rebownynge ben these, solatrum i litill morell, popye, mandrake, de juse of popye, Alphita i barlymele, rubarbe & such oder.

And strenger thane de rebownere ben these, and more abatynge & mekere in werkynge & ben these: Neunsar, saundrys, ceru, wylowgh, brent leed, wyld tasyll, vyne-levys, letuse, umbilicus veneris, & actacia. And tho dat dissolven strongly in de cure of yne ben these, de juse of celidoyne, Rywe, bawme, camphour, ambre, aloe & almanere of galle, & alle kyndys of salt & all oder dat have fretynge strengthe. Nota enfebelynge & dyssolvynge ben these: de yelke of ane ey, de juse of mynte, de juse of ver-veyne, de levys of madir, endive, ffenell, groud-ivy, ewfrase†, licium, water of de vyne, hony, de blood of a culvere‡ or of ane

* A herb known as pulicaria. † Eyebright. ‡ A pigeon or dove.

henne checkyne & de limature of golde. These aforseyd schulbe medlyd *cum repercussinis*, dat is to seye with de rebownere, wheyther de syknesse be in staat or in decrese. ffor yene dat ben bloody, Take de whyte of ane ey with as moche water & putt ther-to de juse of Ache, & whane they be wele beten & scomyd togeder anoynte de yene ther-with. ffor de same: take de juse of verveyne with de whyte of ane ey & with hurdys leye it uppone de ye. *Mordinella domestica cum flore albo* i chykenmete avayleth moche stamped with de whyte of ane ey & thanne clensyd & with herdys of flex leyd ther-one, & yf it be hyld in-to de ye it is de beste medicine for de reednesse & swellynge ther-of & also it delayeth de spottes & de webbe in de ye, & it wole de better werke yf it be medlyd with saffrone, & a litill water of rosys, or wommans milke yf they may be hadde. Also morginella agrestes i pympernole de weche growed in corne & in otys havyng IIII levys. It restoreth de syghte and consumyth de webbe in de ye, yf de juse ther-of be droppyd ther-inne every thyrde dey. Also pympernolle is callyd *testiculus muris* dat is to seye it hath testicules lyke a mows in de weche de seed lyth inne. (Here there is a drawing of pimpernel in the margin of the page,)

Artetica, dat is to seye tho that stuffene or stonyene de wytte & enducen drede ben these: de applys of mandrage hennbane, seed of popye i black & opium, but nevertheless we use not this in de curys of yene, but only opium of de weche we have knowen de experte strength, and as we fynde is worthy to be praysed.

Ayenst de waterynge yene a trywe remedye. Take oyle of benette and anynte it abowte de templys & it is seyd that it schalle cure de yene with-inne IIII days though de infirmitee have enduryd X yere. And note wele dat oyle bennette is made of nywe tyles broken in small pecys & after they be putte in de fyre tyll dey glowen & whanne dey be glowen dey schulbe qweynt in comone oyle & lye ther-inne all a nyght, & after dey schulbe putte in a stilatorye & be dystylled & ther-of schalbe made ane oyle full fructuous for de seyd cause. A stryctorye ayenst de waterynge yene schalbe made dus. *Recipe*, de rootys of boly, sangdragone, mastix olibanum galles poudryd & medle hym togydere with de whyte of ane ey, & with herdys lay it uppone de forhede & de templys & bynde it dat it falle not awey.

A precious oynement for bleryed yene and watery. Take a clene holowgh basyne & anoynt it with inne with buttere dat is not salt and afterward whelve de basyne uppone a vessell dat a mannys uryne is inne, tarte & hote & so lete it stande stylle tyll it be colde. Afterward that schalbe taken dat clevyd withinne to de basyne de weche is blewysshe of colour & ther schalbe putte therto a litill of de grece of a caponne & des schalbe wele medlyd togydere ayene de sounne & thanne boxe it.

With dis oynement de yelydys schulbe anoyntyd mediocrely with a lytyll slice at eve whane he goth to bedde & bynde it with a bonde tylle one de morowe.

This oynement cureth beste above alle de medicines in de wordle de bleryed yene & de waterynge yene as wele in crokedmen as in oder, de weche I have often tymes provyd *per certo*. And after Johannem Damascenum in alle de sorowe of de yene & ayenst defawte of de syghte ffurste it behoveth dyligently to consydre wheyther it be of hote cause or of colde, & yf it be of hote cause furste de mater scalbe deffyed *cum surupo acetoso* III dayes or IIII. And whanne de mater is dygeste ther schall thane be yoven furste a clystere mollificatyff de mor*.

That schall devoyd all de body & dat schall be done with $\frac{v}{2}$·1· of de a lectuarye made of de juse of rosys & made scharpe with Dyagredye. And thanne thou mayst sywerly werke with diverse remedyes in de seyd places after that de semeth to spede.

In colde cause de mater also schall furste be deffyed cum oximell diuretico i squillitico & thane ferdermore de clysterye schalbe yoven as it is aforseyde & by de morowe alle de body schalbe purgyd cum $\frac{v}{2}$ from Jorapige Gale†. And afterwarde he schall procede foorth sywerly to de places of remedye & spede wele . . .

Here ends the Ms. of the cure of the eyes.

To my regret I have not been able to compare the proof with the original, and so some errors in 15th century spelling have probably crept in.

ANNOTATION

Ophthalmological "Moots" in the Curriculum

It has often struck us that more use might be made in the teaching of ophthalmology of gatherings at stated intervals, say once a week, at which a subject is propounded and discussed by the students. Such meetings used to be held, we believe, in the Mayo Clinic in general surgery, and each student in turn would propose some question for discussion. Something similar to the "Moots," those post-prandial meetings for the cracking of legal nuts, which

* The remainder of this word is lost in the binding: it is probably "owe," making "morowe."

† The hierapicra of Galen.

were revived some years ago at the Inns of Court, might be attempted at the eye hospitals in Great Britain. Such a plan would give the student confidence and would help to balance the knowledge acquired in the week in question. Ophthalmology offers plenty of subjects for serious discussion and if a wag once in a way were to ask the question whether strabismus came to England with William the Conqueror or was indigenous among the aborigines; such a light-hearted theme, incapable of proof, might help to vary the monotony. The arrangements might be left as a rule in the hands of the chief clinical assistants, and a weekly rota of attendances for the seniors, who would occupy the position of judge or arbiter, would let each man know beforehand the date of his attendance and would not add very greatly to his labours.

At the present time when the question of post-war reconstruction is being much discussed, we commend this idea to those in authority for what it is worth. On a small scale the scheme would have some affinity to the ophthalmic club which has been for many years a feature among the seniors in the profession.

ABSTRACTS

I.—LENS

(1) **Fischer, F. P. (Utrecht).—Vitamin B_1 in the lens. (Ueber das Aneurin (Vitamin B_1 der Linse).** *Ophthalmologica*, Vol. XCVI, p. 219, 1939.

(1) **Fischer** recalls that Vitamin B_1 in the lens is present in the form of co-carboxylase, *i.e.*, phosphorylated vitamin B_1. It is, therefore, effective not as a vitamin but as a ferment. It is the cause of the break-down of pyruvic acid, the accumulation of which characterizes the progressive turbidity of the lens and explains the deficiency of lactic acid in the cataractous lens.

ARNOLD SORSBY.

(2) **Bencini (Siena).—The parathyroid and thyroid glands and the lens. (Sistema tiro-paratiroideo e cristallino).** *Boll. d'Ocul.*, June, 1939.

(2) There are four parathyroids in the dog, two situated on the upper end of the thyroid, two smaller, on the deep surface of the gland. This makes the removal difficult. **Bencini** operated on four dogs in 1934; all suffered from convulsions which were relieved by the injection of calcium and parathyroid hormone. In

all the animals the amount of calcium in the blood fell after the operations. Three of the dogs died within a month; the fourth lived for more than a year although the injections were stopped after a month on the cessation of the convulsions. In this animal fine opacities were noticed in the lens after six weeks, under the anterior capsule; later, similar opacities were seen under the posterior capsule and radial striae. The cataract became total in nine months. The animal became cachectic with loss of appetite, intense conjunctivitis, and loss of hair in patches, and eventually died. In 1935, the author operated on four other dogs; these showed similar convulsions but under treatment by calcium and hormone survived for two years. During this time no opacities appeared in the lenses. He then removed the remainder of the thyroids, noting marked hypertrophy of the piece that had been left; in one dog he implanted a fragment of this gland on to the surface of the iris. This animal alone survived but showed in the other eye fine subcapsular opacities. The author thinks that the total cataract which was formed after the striae had remained stationary for months while the animal was losing weight, was due to the total cessation of the functions of the thyroid.

HAROLD GRIMSDALE.

(3) **Taliercio (Naples).—The action of the parathyroid hormone on the metabolism of the lens. (L'azione del paratormone sul ricambio del cristallino).** *Ann. di Ottal.*, June, 1939.

(3) It is well known that the removal of the parathyroids is followed by the appearance of opacity in the lens; it has been generally supposed that this is due to a disturbance of the electrolytic equilibrium, causing a rise in the Ph of the aqueous and a consequent increase in the imbibition of the lens and of the calcium content. In a previous paper, **Taliercio** has shown that administration of parathyroid hormone does not increase the calcium in the lens, although the calcium content of the blood is raised. He has examined a number of rabbits, in each case testing the respiration and glycolysis of the lens before and after the administration of the hormone. He finds no difference between the two states. He holds that these observations confirm Campos's opinion that the lessening of the glycolysis in rabbits after parathyroidectomy is in direct relation to the increase of calcium in the lens of such animals.

HAROLD GRIMSDALE.

(4) **Rubino (Padua).—Cataract and scleroderma. (Cataratta e sclerodermia).** *Rass. Ital. d'Ottal.*, September-October, 1939.

(4) Some thirty-four cases of cataract in connection with scleroderma have been published. Other symptoms may be present but

those of the skin are the most marked. The disease seems to be due to some endocrine disturbance; the thyroids, the parathyroids, the pituitary and the genital glands seem to have the greatest importance in its production. There is in most cases some disturbance of the calcium metabolism, probably due to impaired action of the parathyroid. **Rubino** gives the history of a case which has been under his observation; there was a history of familial cataract affecting a brother, a sister, and the father, but it seems to have been impossible to see these. The patient was operated on for cataract at the age of 21 years (he was 38 when seen). The right eye was aphakic; the left showed mature cataract. Perception of light and projection were good. He had noticed for about two years whitish areas of skin on the abdomen which had gradually spread; they had been benefited by treatment with thyroid. The opacity of the left lens was remarkable for the presence of white patches on the anterior capsule—due apparently to the deposition of calcareous matter. The remainder of the lens was turbid and appeared slightly shrunken. Rubino raises the question whether the cataract and the endocrine changes are part of the same disease or whether they depend on some hereditary taint. He thinks that this cannot be settled at present. When examined by Rubino, the patient showed hypercalcemia, but the state of the calcium metabolism at the appearance of the cataract, cannot be known. Rubino thinks that the calcareous spots on the capsule may be due to the hypercalcemia which may be only recent.

HAROLD GRIMSDALE.

(5) **Sironi (Milan).—Electric cataract from industrial and tempestual discharge. (Cataratta elettrica da corrente industriale e da folgore).** *Rass. Ital. d'Ottal.*, September-October, 1939.

(5) **Sironi** has had the opportunity of seeing cataract due to high tension current and to lightning stroke and comparing the two, he finds the changes identical. He thinks that in lightning stroke the main discharge often misses the person who is affected only by some of the branches, into which the whole breaks up. Thus the potential is reduced to something like that of high power industrial current. It has been said that the occurrence of a cataract shows that the discharge must have passed through the head; the author's cases seem to show that this is not necessary since the burns produced at the point of entrance and exit were on the body and leg. The appearance of the opacity may not follow the accident immediately but may be delayed for many months.

HAROLD GRIMSDALE.

(6) **Pinkhof, J. (Amsterdam).—Ectopic zonula.** *Ophthalmologica*, Vol. XCVIII, p. 149, 1939.

(6) **Pinkhof** describes the changes in an eye removed in a child aged four because of secondary buphthalmos. The eye had previously shown lens opacities, capsulo-pupillary vessels and afterwards spontaneous resorption of the lens. Apart from changes resulting from chronic intra-ocular hypertension, there were found: resorption of lens substance, signs of capsule rupture and upward displacement of the lens residue; irregular displacement of the ciliary processes, mostly backward, but locally much forward; a membranous septum behind the iris, connected with the ciliary body, the lower pupillary border, the lens residue and a remnant of the hyaloid canal. This septum, containing elements with both glial and mesenchymatous properties, also showed elements with the properties of zonular fibres and membranes, finding insertion on the lens residue, the ciliary body, the hyaloid canal rest and on the anterior and posterior aspect of the lower pupillary border.

ARNOLD SORSBY.

(7) **Weekers, R. (Liége).—Carbohydrate metabolism of the lens. Transparency of the isolated lens preserved in the presence of glucose, laevulose and galactose. (Métabolisme hydrocarboné du cristallin. Transparence de l'organe isolé en présence de glucose, lévulose ou galactose).** *Ophthalmologica*, Vol. XCVIII, p. 142, 1939.

(7) **Weekers** reports that the isolated adult rabbit's lens irrigated with Ringer or glucose-free Tyrode-solution becomes turbid by the second or third day. On addition of glucose to the perfusion medium the lens keeps clear for a longer period. Neither fructose nor galactose can be substituted for glucose. The period of survival of the organ under the experimental conditions of this work is in no case so long as that of Bakker who used abdominal fluid.

ARNOLD SORSBY.

(8) **Borsotti (Pavia).—Clinical examination of antigen-therapy in cataract. (Tre anni e mezzo di antigeno-terapia cristallinica in clinca).** *Ann. di Ottal.*, November, 1939.

(8) **Borsotti** has tried during the past three and a half years to see whether injection of emulsion of lenses, cataractous and other, has any effect on the absorption of remains of lens from the anterior chamber, after cataract operation. He gives notes on 34 cases; of these, 15 showed no reaction to the injections; 19 seemed to have an unusually active absorption after injection, but it is not possible to say how much was due to the treatment. When

the operated eye showed iritic reaction, injection was in all cases followed by rapid improvement. In as much as no inconvenience was seen after injection in any case, the author thinks that this method should be tried whenever the remains of lens are slow in becoming absorbed.

HAROLD GRIMSDALE.

(9) **Rochat, G. F. (Groningen).—Can lactoflavin be detected in the human lens? (Ist das Lactoflavin in einer einzigen menschlichen Linse nachweisbar?)** *Klin. Monatsbl. f. Augenheilk.*, Vol. CIII, p. 432, 1939.

(9) **Rochat** failed to find lactoflavin in the human lens, but a fluorescent substance was present in normal lenses of all ages, and in cataractous lenses in which any clear substances remained, which in its chemical behaviour was probably a breakdown product of lactoflavin. He does not contradict Fischer's observation as to the presence of lactoflavin in animal lenses.

D. R. CAMPBELL.

(10) **Marchesani, O.—Brachydactly and congenital globular lens. (Brachdaktylie und angeborene Kugellinse als Systemerkrankung).** *Klin. Monatsbl. f. Augenheilk.*, Vol. CIII, p. 392, 1939.

(10) **Marchesani** describes the occurrence of a globular lens with brachydactyly, as a congenital defect. The lens is abnormally small and prone to subluxation. It causes myopia and often gives rise to glaucoma. Brachydactyly is a lack of growth of the hand and fingers, and is a striking contrast to arachnodactyly, a condition which can occur with ectopia lentis. The possibility that the size of the lens is influenced by the mode of growth of the ciliary body (a mesodermal structure) is discussed.

D. R. CAMPBELL.

(11) **Fischer, F. P. (Utrecht).—The yellow-brown pigment of the lens. (Ueber die gelbbraunen Farbstoffe der Linse).** *Ophthalmologica*, Vol. XCIX, p. 425, 1940.

(11) **Fischer** reports that the yellow-brown substances of ageing and cataract lenses belong to the melanoidines, These are condensation compounds of amino acids or amines with carbohydrates. They are sharply distinguished from the humine and melanin substances.

They have anti-toxic properties owing to the fact that they use up amines in their synthesis. Other views as to the nature of the colouration of the lens are discussed.

ARNOLD SORSBY.

(12) **Colenbrander, M. D. (Delft).—On the measurement of the power of the lens and accommodation.** *Ophthalmologica*, Vol. XCIX, p. 402, 1940.

(12) On a detailed study with special apparatus **Colenbrander** concludes that it is possible by means of monochromatic objects to determine accurately the chromatic aberration of the eye and to get trustworthy values for the chromatic aberration of the lens. The not unlikely hypothesis that the specific chromatic aberration of all human eyes is the same makes it possible to detect the power of the lens and to compute the length of the eye.

Accommodation was determined with a new test-chart designed by the writer. A moderate correlation could be found between the power of the lens and the accommodation.

ARNOLD SORSBY.

II.—MISCELLANEOUS

(1) **Måhéln, S. (Stockholm).—Table showing ocular findings in patients treated with dinitro-orthocresol. (Tabelle ueber Augenuntersuchungen an mit Dinitroorthokresol behandelten Patienten).** *Acta Ophthal.*, Vol. XVII, p. 215, 1939.

(1) **Måhlén's** paper consists of tabulated details of 65 patients treated with dinitro-orthocresol, the table indicating the absence or the degree of lens changes and the effect on vision.

ARNOLD SORSBY.

(2) **Sjögren, H. (Jönköping).—A contribution to our knowledge of the ocular changes induced by sulphuretted hydrogen.** *Acta Ophthal.*, Vol. XVII, p. 166, 1939.

(2) **Sjögren** recalls the clinical picture produced by irritation from sulphuretted hydrogen (conjunctivitis and superficial punctate keratitis). He describes two cases of his own and emphasizes that different people respond unequally to the irritant.

ARNOLD SORSBY.

(3) **Kaye, Herbert (Johannesburg, South Africa).—Treatment of angiomatosis retinae.** *Arch. of Ophthal.*, March, 1941.

(3) **Kaye** gives an account of two cases of angiomatosis retinæ which were successfully treated by H. B. Stallard. One is the son aged 24 years, and the other the daughter aged 26 years, of a woman already blind in both eyes from the end results of angiomatosis retinæ, which had been treated unsuccessfully by radium. In

the daughter, the right eye had already been treated by radium and had a complicated cataract; the left eye, which saw 6/6, had a globular angeioma in the temporal periphery of the retina. The son had a similar, but less advanced lesion. Both were sent to England and treated by Stallard with a combination of katholysis and surface diathermy. The former method was used for localisation of the growth and the katholysis needle was also passed into and around the large feeding vessels just proximal to it. The growth itself was treated by katholysis punctures (3 m.a. for 3 seconds), three applications of surface diathermy (100 m.a. for 8 seconds) and several punctures with a 1·5 mm. needle (40 m.a. for 3 seconds). These cases have now been followed for 12 months since the operation and show a satisfactory result with full preservation of vision. The previously enlarged vessels, feeding the growth, are normal in size, the area formerly occupied by it being densely white with a good deal of fibrous tissue.

F. A. W-N.

(4) **Thompson, Richard (New York).—Lysozyme and the antibacterial properties of tears.** *Arch. of Ophthal*, March, 1941.

(4) Starting with the statements that post-operative infections of the eye were relatively infrequent in pre-Listerian days, and that the earlier bacteriologists noted how few were the organisms which could be cultivated from normal conjunctivae, **Thompson** gives an interesting review of the work done up to date on lysozyme and the antibacterial actions of the tears.

The results obtained by earlier workers were somewhat contradictory, but analysis brings out certain facts. Thus there is a fair unanimity about the killing or inhibition of cultures of staph. aureus by tears, but there is doubt about other organisms. Ridley, using a new technique, found that staph. aureus, haemolytic and faecal streptococci, pneumococci, and cholera vibrios were markedly inhibited, whereas b. coli and b. typhosus were not affected. He also found that a slight decrease in tear concentration would cause complete loss of anti-bacterial action. Fleming in 1922 appears to have been the first to demonstrate the lytic effect of tears against many saprophytes and a few parasites (*e.g.*, some strains of streptococci were dissolved by tears even in a dilution of 1:100). Zur Nedden in 1907 found that while normal tears had no action against b. typhosus and other organisms, the fluid obtained from the conjunctivae after treatment with silver nitrate had a marked bactericidal action on these bacteria, an effect which was later proved to be due to enzymes liberated by the breakdown of leucocytes consequent on their exposure to silver nitrate. Fleming, when he made his discovery of the lytic properties of tears found that the same effect

could be obtained with egg-white, nasal mucus and various tissue extracts. He gave the name " lysozyme " to the enzyme responsible for producing this lysis of bacteria, and its properties are as follows:— it is a polypeptid enzyme, of small molecular size, soluble, heat stable and filterable in acid but not in alkaline solutions. It is inactivated by oxidising agents and by some heavy metals, though under some conditions this action is reversed by sulphide or cyanide groups. The enzyme is first adsorbed on to the wall of the susceptible organism and then makes this permeable so that lysis occurs, probably through a specific action on the sugar linkages of certain amino-carbohydrates. The rate of lysis is increased by heat up to 60°C, and by an increase of acidity, the optimum pH being about 4. It is notable that although lysozyme is present in most mammalian tissues and fluids, it is absent in the cerebro-spinal fluid, the aqueous and the urine. Also, although it is present in high concentration in human tears, it is present in very small quantities in the tears of cats and rabbits. Lysozyme is produced by the lacrymal gland, and Ridley showed that hypersecretion of tears causes an eventual diminution in its concentration.

Its formation is related to vitamin A intake as shown by its absence in the tears in xerophthalmia. The effect of lysozyme action on organisms other than the sensitive micrococci differs markedly with the pH, an apparently specific reaction being obtained against certain organisms only at a certain hydrogen ion concentration. The position is further complicated by the possible presence of other bactericidal substances, *e.g.*, saliva has an inhibiting action against diphtheria bacilli which can be destroyed by temperatures or by filtration processes which leave the lysozyme intact. The effect on lysozyme of various antiseptics used as lotions was found to be injurious, with the exception of merthiolate. The indirect effects (*e.g.*, silver nitrate), however, might be different, though they have not yet been adequately studied. The same observation applies to the general antibacterial action of tears which is almost certainly not due entirely to their lysozyme content. The action of egg-white, however, as a remedy for eye diseases dates back to the earliest Roman and Anglo-Saxon periods and recent work by two observers shows its efficacy in surface infections of the eye. This is probably greater than some of the other historic eye remedies, such as " rain water, caught on Ascension Day."

F. A. W-N.

(5) **Statti, Louis W. (Pitsburgh).—Pentothal sodium anaesthesia in ophthalmology.** *Arch. of Ophthal.*, March, 1941.

(5) **Statti** gives some useful hints about the administration of pentothal, based on his experience in 100 consecutive eye cases.

For smooth anaesthesia, pre-operative medication is essential. An injection of morphia and atropine is given, 30-45 minutes before operation, and a 0·50 per cent. solution of pontocaine hydrochloride is instilled into the eye in 3 doses at 5 minute intervals before operation. The amount of pentothal used has to be adjusted to the requirements of each individual patient, and it is best given intermittently. The initial dose in adults is 2-3 c.c. and in children and aged patients 1-2 c.c. The injection is then stopped for 30 seconds, before a further 2-3 c.c. are administered—as a rule the patient is ready for operation after 5-10 c.c. It must be remembered that since the agent is given intermittently, the effect of each successive dose is increased, the pause between injections is therefore highly important. It is equally important that oxygen or a mixture of oxygen and carbon dioxide be administered continuously during operation, owing to the tendency to respiratory depression.

F. A. W-N.

(6) **Lebensohn, James E. (Chicago).—The eye and sleep.** *Arch. of Ophthal.*, March, 1941.

(6) Mauthner fifty years ago noted that all chronic forms of sleeping sickness were associated with ptosis, ocular muscle palsies, and engorgement of the walls of the third ventricle and of the aqueduct. He therefore deduced that sleep depended on a temporary suspension of function of the periventricular grey matter which interrupted conduction to and from the cortex. This work was confirmed in 1939 when Ranson found that excitation of the hypothalamus produced wakefulness, destruction of it, sleep. This region includes the tuber cinereum, the corpora mammillaria and the adjacent nuclear masses, extending from just behind the chiasma to the opening of the aqueduct. The ocular concomitants of sleep can be explained as a sequence of muscular fatigue, and depression of cortical and sympathetic activity. As a result of this latter, the upper lid droops and the antagonistic orbicularis is stimulated, lacrimation ceases and the eyes feel dry. Conjunctival vaso-dilatation excites production of mucus, with accompanying sensations of grittiness and burning. These symptoms bear a close resemblance to those of so-called conjunctival asthenopia, a condition often associated with insomnia and the resemblance led **Lebensohn** to postulate a depression of activity of the sympathetic nervous system as the underlying cause. He therefore tried small doses of thyroid (gr. $\frac{1}{2}$-1 daily) in patients with chronic conjunctival hyperaemia not yielding to other measures, and the results in a large number of cases were most encouraging.

F. A. W-N.

(7) **Nicholls, J. V. V. (Montreal).—A survey of the ophthalmic conditions among rural school children.** *Canadian Med. Assoc. Jl.*, May, 1941.

(7) In October, 1939 **Nicholls** carried out a survey of the incidence of abnormal ophthalmic conditions among rural school children in Pontiac County, P.Q. In May, 1940, another similar survey was carried out in this County and in Wakefield County. The pupils were examined without selection. In all 512 children (255 male and 257 female) between the ages of five and eighteen years were examined. The examination comprised the anterior segment, adnexa and extra-ocular movements. Vision was tested at 20 ft. under proper illumination and all children showing subnormal acuity were examined under a cycloplegic. The results are given in tabular form and in commenting on them the author writes as follows:

"Of the ophthalmic conditions found the most important and interesting comparisons are seen with regard to defects of vision. In the present survey 14·6 per cent. of the children had subnormal visual acuity as compared with 29·7 per cent. in the previous survey. A search for the reasons of this reduction discloses some interesting facts. It is found that the incidence of hypermetropia and hypermetropic astigmatism in the two surveys is almost identical. The same is true of anisometropia, which is another frequent cause of subnormal visual acuity. It is found that the lower incidence of subnormal visual acuity in the present survey is due entirely to the smaller number of cases of strabismus and myopia. There is a definite hereditary factor in both these ailments. A larger proportion of the children of the previous survey were related in some degree than in the present series. In the more detailed analysis carried out in the first survey it was found that myopia became less common, the younger the age-group. In the present series a greater proportion of the children belong to the lower age-groups. Apparently something else, statistically less definable, is operating. In the first survey fully one-half of the children examined attended Shawville High School, practically under urban conditions. Whereas, in the present series, much the larger proportion of children attended school under rural conditions. In some places it was found that school closed down during the severe winter months. In other words, the children in the previous survey were under a more continuous and determined educational drive than the children in the present survey. This has taken its toll in myopia.

In the two surveys glasses were prescribed in almost the same percentage of cases. However, fewer children were found already wearing glasses in the present series. In four such cases it was found that the glasses worn were not necessary. As in the last survey, a medical practitioner was not responsible for the mistake in diagnosis in any of these cases."

R. R. J.

(8) **Cogan, David G. (Boston).— Bullous keratitis, with particular reference to the pathology of experimental corneal vesiculation.** *Arch. of Ophthal.*, June, 1941.

(8) **Cogan's** purpose in writing this article is to compare the pathological changes produced in his experimental cases of bullous keratitis in cats with those seen in a clinical case in man, where the eye was removed less than three weeks after the onset of the condition. There are four current theories of the production of bullous keratitis. (1) That the fluid is derived from the aqueous by percolation through the substantia propria. (2) That the epithelial changes are the expression of a neuro-dystrophy. (3) That they are secondary to disease of Bowman's membrane. (4) That they are due to osmotic imbibition of fluid from the tears. The author cites objections to all these theories except the last which is strongly supported by his experiments. In these he injected salt solutions into the anterior chambers of cats' eyes, concentrations of 2·5, 5, 10, and 20 per cent. being used. The surface of the cornea was kept moist either with tears or with tears mixed with normal saline. Oedema of the epithelium and superficial opacity appeared within five minutes of injection and quickly went on to formation of bullae of gradually increasing size. The stronger the concentration of the salt solution the more quickly did the changes occur and the greater was the vesiculation. If distilled water was used for moistening the front surface of the cornea, the changes were more marked still and if the endothelium of the living cornea had been scratched, prior to the injection of salt solution, the epithelium overlying the scratched area showed oedema and vesiculation first. Histologically, the epithelium increased in thickness, the swelling involving both the cytoplasm and nuclei of the cells. It was not always uniform and sometimes there were left strata of relatively less swollen cells occupying one or two layers. Similar stratification occurs in human bullous keratitis. The subepithelial debris found in the bullae probably represents the contents of basal cells which have swollen and burst.

Although the substantia propria is little changed in experimental or clinical bullous keratitis, it was found to be swollen to double or treble its usual thickness over those areas where the endothelium and Descemet's membrane had been scratched off, prior to injection of salt solution.

There are three main differences between (*a*) the acute experimental type of bullous keratitis, and (*b*) the chronic clinical condition. In (*a*) the vesicles are subepithelial; in (*b*) intra-epithelial. In (*b*) a concentric arrangement of cells is found rather like cell nests, which is absent in (*a*), while finally the subepithelial material in (*a*) is a mixture of amorphous debris and free nuclei, but in

(*b*) there is also some organised tissue. The author considers that none of these differences invalidates the analogy between the two conditions.

F.A.W.-N.

(9) **Reese, A. B. (New York).—Orbital tumours and their surgical treatment.** *Amer. Jl. Ophthal.*, Vol. XXIV, pp. 386 and 497, 1941.

(9) **Reese** has studied 174 cases of orbital tumours for the purpose of eliciting certain important clinical points in their differential diagnosis, the incidence of various lesions, the treatment indicated and the prognosis.

He has subdivided this clinical material into three groups. (1) New formations primarily in the orbit, 109 cases. (2) Those arising in structures contiguous to the orbit, 51 cases. (3) Orbital new formations arising from systemic disease or from a neoplasm situated at a distance from the orbit, 14 cases.

The growth of a haemangioma of the orbit may stop with the body growth. Pseudo-tumours, the result of chronic inflammation, show a more rapid onset of exophthalmos than orbital neoplasms other than carcinoma and lymphosarcoma. Prodromal symptoms of diagnostic importance are diplopia, transitory oedema of the eyelids and conjunctiva and retro-ocular pain. Radiographs are frequently negative. Regression may take place and in 4 or 5 months enophthalmos is evident.

Meningioma is a slow growing tumour and innocuous recurrences may appear 20 years after excision of the neoplasm. These growths are radioresistant. Dermoid cysts of the orbit remain dormant for a long time and then undergo rapid growth in a few months.

Glioma of the optic nerve may extend from the optic disc to the hypophysis and sometimes be manifest at multiple focal points of origin in one or both optic nerves in the chiasma and the brain. It is remarkable that recurrences do not appear in spite of incomplete removal in some cases.

Carcinoma of the lacrymal gland is very rare and only two cases of sarcoma have been recorded. Lacrymal gland tumours are more commonly " mixed-celled." There is a high frequency of recurrence after excision and distal metastases and intra-cranial extension occur.

Haematoma of the delayed type becomes manifest many months after trauma. The new formations described above formed 87 per cent. of the 174 cases of unilateral exophthalmos investigated by the author.

In group (2) neoplasms arising in the naso-pharynx were in some cases small enough to elude detection at the site of the

primary growth. Such neoplasms extend to the foramen lacerum, along the carotid artery and through the superior orbital fissure into the orbit. Carcinoma of the ethmoid is frequently associated with secondary infection and orbital cellulitis.

In group (3) the principal systemic disorders responsible for orbital new formations were metastatic carcinoma, Hodgkin's disease of the lacrymal gland, lymphatic leukaemia, Schuller-Christian's disease and gumma.

The author discusses the value of X-rays in diagnosing bone involvement, enlargement of the optic foramen and intracranial extension. He recommends aspiration biopsy in some cases. In performing exploratory operations on the orbit it is important to avoid cutting through the upper lid in which the levator palpebrae superioris muscle may be damaged. For neoplasms in the temporal part of the orbit he states that satisfactory exposure for the removal of the neoplasm may be obtained by an external canthotomy and a conjunctival incision around the temporal half of the globe from 12 o'clock to 6 o'clock about 10 mm. posterior to the corneo-scleral junction.

H. B. STALLARD.

BOOK NOTICES

The Principles and Practice of Ophthalmic Surgery. By EDMUND B. SPAETH. Pp. 885, Figs. 451. Henry Kimpton. 1941.

This useful work is one which will commend itself as a reference book to all those who perform operations on the eyeball or its adnexa. In its 850 odd pages are described and illustrated most of the procedures which the ophthalmic surgeon is likely to be called upon to carry out.

The author is well known in this country for his work on plastic surgery of the lids and as would be expected, his writings on this subject form a particularly valuable part of the volume under review. In many of the books on ophthalmic surgery, this branch receives somewhat scant treatment, but such is certainly not the case here. All ophthalmic surgeons are now and again faced with difficult problems, say in reconstructing the lower lid after removal of a malignant growth, and if they will consult "The Principles and Practice of Ophthalmic Surgery," they should be able to find all the information required for the performance of a successful operation.

Apart from the sections on plastic procedures, this book has many other useful features; not the least important of which is the provision of tables of specific operations and indications for their performances. In the section on glaucoma for example, the five varieties of this disease are considered and the utility or otherwise of some nine different operations are clearly tabulated. The same is done for cases of squint.

Many a well planned and executed ophthalmic operation has been known to fail because of inadequate aftercare, but Spaeth safeguards against this by including another useful feature, namely a series of specific instructions on the pre- and post-operative care of cases, with details about nursing, diet, etc., which are not usually found in books on ophthalmic operative surgery.

In his preface, the author states that he has endeavoured to include all surgical operations which are part of his own practice, and this gives his book a personal touch which is of definite value. It also disarms criticism, since the procedures he describes are those which he has found to be satisfactory, even though others might not agree with them. A case in point is his instillation of 1 per cent. eserine as an ointment or solution after a simple extraction, a procedure which is not employed much in this country. Some of his statements are perhaps too categorical. Thus in describing squint operations, it is laid down that tendon which has been within the grasp of forceps should be resected and discarded; but many satisfactory operations have been performed where this principle has been disregarded.

Ophthalmic surgery is such a personal act, that no two surgeons will be found to use the same methods. It would therefore be both easy and ungrateful to find more criticisms, of which the above are examples. One can safely say that the author has left very little out, but one point he has omitted to mention is the use of a heated probe or cautery to check troublesome haemorrhage during the performance of a trephine operation. These are minor points, however, and their mention does not in any way reflect on the general excellence of the book, which is one to which the practising ophthalmic surgeon will refer again and again, especially when faced by a particularly difficult case.

We should like to take this opportunity of congratulating Dr. Spaeth on the production of the second edition of his valuable work and of assuring him that its reception in this country will be more than cordial. This is especially so at a time like the present when the future of the world so obviously depends upon the close co-operation of English speaking countries.

CORRESPONDENCE

CACOETHES SCRIBENDI

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS—Your annotation, "Cacoethes Scribendi," in the October issue prompts me to reply, not because it seems to me an important contribution to the War effort, but rather as a protest against the constant but usually ill-informed references in the Press to War Office ineptitude. Since the prescription of spectacles does not seriously affect security, that at least can be answered.

I personally could imagine nothing more sensible in a relatively small place as Moorfields where patients are seen by a surgeon, walk to the spectacle department to order their glasses and return in a few days to pay for and claim them, that the filling up of one form should be sufficient.

In the army, however, the problem is somewhat more complex, for by the time the spectacles appear the soldier may be transferred to another area, while the financial part of the transaction is borne not by the patient, but by the Treasury. Even so, the army has gone one better than Moorfields, for a system is now being extended as rapidly as the trade can meet the enormous demands involved, whereby the soldier gets his refraction done by the specialist, walks next door where his spectacles are glazed on the spot by a sergeant optician, and then walks out with his spectacles on his face. It may surprise your annotator that the efficiency of the system is marred by the filling up of only one form.

Presumably your annotator was referring to the older system wherein spectacles are glazed in a central depot. In this a form is made out in triplicate (not quadruplicate), but, curiously, the War Office provides the forms made up in pads so that carbon copy-sheets can be slipped in. The "enormous amount of clerical work" referred to therefore amounts to the specialist writing out the prescription once (just as in Moorfields)—unless he is mentally dull and backward. Each copy has a specified purpose; the first is retained in the clinic for reference; the remaining two are sent to the depot. Here one is retained for necessary purposes of reference (I take it that the optician at Moorfields also keeps a record, made out, perhaps, more laboriously—or if he doesn't, he should); the other is sent with the spectacles to the soldier for purposes of checking and is signed by him as a receipt, which finds its way to Finance and is paid. If your annotator would lift his mind above the narrow parochialism of Moorfields and imagine himself catering

for hundreds of thousands of cases of refraction per annum in constant movement not only in this country, but abroad, and if, having done so, he can devise a more simple but still efficient system and one which at the same time will provide, in the interests of his Income Tax, an adequate financial check over a multitude of small transactions running in the aggregate to hundred of thousands of pounds per annum, I will personally welcome him most cordially at the War Office, and he will have ample opportunity of re-organizing the whole affair. I have a suspicion, however, that despite anything that may have happened in the Crimean war, he will find that the Army Medical Directorate takes no pleasure in the multiplication of unnecessary army forms.

Yours faithfully,

STEWART DUKE-ELDER, COLONEL,
Consulting Ophthalmic Surgeon to the Army.
The War Office.

October 10, 1941.

We apologise for our "quadruplicate" error, and at the same time wish to thank Colonel Sir Stewart Duke-Elder for his authoritative statement which answers the criticism in the annotation as far as spectacles are concerned.—EDITOR.

NOTES

BRITISH JOURNAL OF OPHTHALMOLOGY

Increase in Subscription Rates in 1942

WE regret to have to inform subscribers that it has been found necessary to increase the price of the Journal from January 1, 1942, to £3 3 0 per annum, or 7/6 per number.

As will be easily understood, this increase has been necessitated by the rise in the cost of every single item of expenditure, paper, printing and distribution, in some instances up to double the pre-war cost.

The management will make every effort to keep the Journal up to its present high standard both in quality and quantity, and hopes it may rely on its subscribers to provide the necessary funds to make this possible.

* * * *

Death

WE are sorry to see in the August Number of the *American Journal of Ophthalmology* the announcement of the death of Dr. Claude Thomas Wolfe on April 9, 1941. Dr. Wolfe was born in 1883, the

son of a medical man. He graduated at Kentucky in 1907, and after a year in general practice took up the study of diseases of the eye and ear. Moving to Louisville in 1911 he rose steadily to the post of clinical professor and head of the ophthalmological department, which position he held up to the time of his death.

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Corrigenda

THE price of a single copy of the Journal in 1942 will be 7/6 instead of 6/- as quoted in our last number.

The following corrections should be made in Mr. Graham Scott's paper on Hereditary Optic Atrophy in the October issue.

(1) Page 461, line 11, add "but autosomal transmission is not improbable" to follow 'evidence of sex linkage.'

(2) Page 474, line 6, add "or of partial sex linkage" to follow 'sex linked transmission.'

(3) Seven lines further add "may" to author's cases 'MAY differ from some of the published pedigrees."

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Protection of the Eyes in Industry

AN exhibition of appliances for the protection of the eyes in industry was opened at the Eye Department, Royal Infirmary, Edinburgh, on September 19.

The exhibition, part of which is permanent, was arranged by the W. H. Ross Foundation (Scotland) for the Study of Prevention of Blindness.

A special feature was a series of enlarged photographs of Engineering processes specially taken for the exhibition.

For the occasion, Messrs. Theodore Hamblin, Ltd., kindly sent the appliances that had been displayed at Cambridge for the Ophthalmological Congress.

The Chair was occupied by Dr. Arthur H. H. Sinclair, Chairman of the Ross Committee, and the speakers included H.M. Inspector of Factories, and representatives from trade councils, employers of labour, and the Department of Health for Scotland.

There was an excellent turn out of persons influential in industry, and the interest shown in the exhibits is a good augury for this important aspect of prevention of blindness.

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North of England Ophthalmological Society

The following meetings have been arranged:—December 6, 1941, at Leeds; February 7, 1942, at Newcastle-on-Tyne; March 7, 1942, at Liverpool; April 11, 1942, at Sheffield.